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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/718,528	11/21/2000	John E. Dolan	SLA 0316	2544

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CHERNOFF, VILHAUER, MCCLUNG & STENZEL  
1600 ODS TOWER  
601 SW SECOND AVENUE  
PORTLAND, OR 97204-3157

EXAMINER

DASTOURI, MEHRDAD

ART UNIT PAPER NUMBER

2623

DATE MAILED: 11/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/718,528

Applicant(s)

DOLAN, JOHN E.

Examiner

Mehrdad Dastouri

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 7-10, 13-20 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22 is/are allowed.
- 6) ☒ Claim(s) 1, 7, 9, 10, 14 and 16-19 is/are rejected.
- 7) ☒ Claim(s) 8, 13, 15 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 23, 2004 has been entered.

### ***Response to Amendment***

2. Applicant's amendment filed August 23, 2004, has been entered and made of record.

### ***Response to Arguments***

3. Applicant's arguments have been fully considered but they are moot in view of new grounds of rejection.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 8, 13 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites, in Lines 4-5, "a minimal curvature of said intensity map in another direction.". No other direction has been identified in Claim 8 prior to reciting "another direction".

Claim 13 recites, in Lines 5-6, "and being in a direction approximately perpendicular to said maximum curvature". Claim does not identify a direction for the maximum curvature.

Claim 15 recites, in Lines 8-9, "in a direction approximately perpendicular to said minimum curvature". Claim does not identify a direction for the minimum curvature.

#### ***Claim Objections***

6. Claims 1 and 7-9, 13 are objected to because of the following informalities:

In Line 5 of Claim 1, "is an selected" should be corrected to "is selected". Claims 7-9 depend on Claim 1.

In Line 7 of Claim 9, "an axis pixel" should be corrected to "a character stroke axis pixel".

In Line 1 of Claim 13, "to identify axes" should be corrected to "to identify character stroke axes".

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 7, 9, 10, 14, 16-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Jefferson (U.S. 5,745,596).

Regarding Claim 1, Jefferson discloses a method for detecting text in a mixed-content image, said method comprising:

identifying an edge associated with a high-contrast intensity change (Figures 2A-2D; Column 1, Lines 29-33; Column 3, Lines 30-47);

identifying an intensity gradient direction of the text edges (Figures 2B and 2C; Column 3, Lines 30-63. Figure 2B depicts the intensity gradient (a part sloping upward or downward) at a direction transverse to the direction of the character strokes.);

identifying a character stroke axis, wherein said axis is selected from the group consisting of a stroke valley or a stroke ridge (Figures 2A-2D; Column 3, Lines 24-50. Character strokes are shown in Figure 2A. Figure 2A depicts character pixels in a horizontal X-Y plane wherein each pixel is identified with its x-y coordinates. Figure 2B depicts pixel intensities in a Z-plane perpendicular to X-Y plane. Stroke valleys and ridges are shown in Figure 2B for scan line 42, and similarly can be plotted for the stroke valleys and ridges of other scan lines parallel to scan line 42. Each point on the curve shown in Figure 2B is located on a vertical line (axis) perpendicular to the X-Y plane and indicate the intensity of the pixel located at the intersection of this vertical line (axis) and X-Y plane. Combination of Figure 2A and a plurality of Figures 2B for different scan lines will generate the three-dimensional intensity maps for character strokes "THE". As it is well known in digital image processing, the intensity axis of the intensity gradient curve (illustrated in Figures 2B and 2C) is in a direction transverse to

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the character stroke depicted in Figure 2A. The vertical axes perpendicular to X-Y plane are stroke axes. Furthermore, Lines 52 and 56, or perpendicular lines to intensity plane at locations 46, 48 and 50 are also stroke axes.);

measuring a substantially transverse distance between said axis and said edge (Figures 3 and 4; Column 3, Lines 30-67, Column 4, Lines 1-27; Column 5, Lines 14-67. MaxEdgeWidth which is set to 7 is a transverse distance between the stroke axis and the edge.); and

identifying said edge as a text edge when said substantially transverse distance is less than a threshold value (Figures 3 and 4; Column 4, Lines 30-63; Column 5, Lines 14-67. MaxEdgeWidth is an example of the threshold value.).

Regarding Claim 7, Jefferson further discloses the method of Claim 1 wherein said measuring a substantially transverse distance comprises measuring the proximity of an edge to an axis in a direction parallel with said intensity gradient direction (Figures 3 and 4; Column 3, Lines 30-67, Column 4, Lines 1-27; Column 5, Lines 14-67).

Regarding Claim 9, Jefferson further discloses method of Claim 1 wherein said measuring a substantially transverse distance comprises the acts of:

beginning at a subject pixel that has been identified as an edge and progressively analyzing adjacent pixels in a direction parallel with the intensity gradient of the subject pixel (Figures 2B and 2C; Column 3, Lines 24-50); and

analyzing each successive pixel to determine whether said successive pixel has been identified as a character stroke axis pixel (Figures 2B, 2C and 3; Column 3, Lines 24-67, Column 4, Lines 1-27).

With regards to Claims 10, arguments analogous to those presented for Claim 1 are applicable to Claim 10.

With regards to Claim 14, arguments analogous to those presented for Claims 1 and 7 are applicable to Claim 14.

With regards to Claims 16 and 17, arguments analogous to those presented for Claim 10 are applicable to Claims 16 and 17.

With regards to Claims 18 and 19, arguments analogous to those presented for Claim 10 are applicable to Claims 18 and 19.

***Allowable Subject Matter***

9. Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 8, 13 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and rewritten to overcome the 35 U.S.C. 112 second paragraph rejection set forth in the Office Action.

11. Claim 22 is allowed.

Claim 22 of the instant invention recites a method for detecting text in a mixed-content image, by identifying an edge associated with a high-contrast intensity change and an intensity gradient direction for said edge. The invention further identifies a character stroke axis from the group consisting of a stroke valley or a stroke ridge by analyzing image components until the change in curvature of the intensity curve

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between two successive image components in a direction substantially parallel to the intensity gradient direction reaches a maximum absolute value at the same position that the change in curvature of the intensity curve in a direction substantially perpendicular to the intensity gradient direction is near zero, wherein the curvature of the intensity curve is calculated by solving for the eigenvalues of a Hessian matrix.

The edge will be identified as a text edge when the distance, in the intensity gradient direction, between the character stroke axis and the edge is less than a threshold value.

The features identified are neither discussed nor suggested by the prior arts of record.

#### ***Contact Information***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mehrdad Dastouri whose telephone number is (703) 305-2438. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MEHRDAD DASTOURI  
PRIMARY EXAMINER

*Mehrdad Dastouri*

Mehrdad Dastouri  
Primary Examiner  
Art Unit 2623  
November 10, 2004